

WHAT IS CLAIMED IS:

1. A method of manufacturing an interferometric modulation pixel, comprising:

5 forming a first electrode layer on a transparent substrate, wherein an uppermost layer of the first electrode layer is an insulating layer;

forming a protection layer on the insulating layer

forming a sacrificial layer on the protection layer;

10 forming at least two first openings in the sacrificial layer, the protection layer and the first electrode layer to demarcate and define a first electrode, wherein the first electrode is made from the first electrode layer;

coating a photosensitive material on the sacrificial layer and in the first openings;

15 patterning the photosensitive material to form supports in the first openings;

forming a second electrode layer on the sacrificial layer and the supports;

forming at least two second openings in the second electrode layer to define a second electrode, wherein the second electrode is made from the second electrode layer and the orientation of the second openings is 20 perpendicular to the two first openings; and

removing the sacrificial layer.

2. The method of claim 1, wherein the insulating layer comprises silicon oxide or silicon nitride.

3. The method of claim 1, wherein the protection layer does not contain silicon.

4. The method of claim 1, wherein the protection layer comprises metal
5 oxides.

5. The method of claim 1, wherein the protection layer comprises aluminum oxide, titanium oxide or tantalum oxide.

10 6. The method of claim 1, wherein the sacrificial layer comprises metal, polysilicon or amorphous silicon.

7. The method of claim 1, wherein a method of forming the first openings and the second openings comprises photolithography and etching.

15 8. The method of claim 1, wherein the photosensitive material comprises a photoresist or a photosensitive polymer.

20 9. The method of claim 1, wherein a method of patterning the photosensitive material comprises exposing and developing the photosensitive material.

25 10. The method of claim 1, wherein the sacrificial layer is removed by remote plasma etching.

11. The method of claim 1, wherein a plasma precursor used by the remote plasma etching comprises a fluorine-based or chlorine-based etchant.
12. An interferometric modulation pixel, comprising:
- 5 a first electrode;
- a movable second electrode being situated above the first electrode and being parallel to the first electrode;
- two supports between the first electrode and the second electrode to form a cavity within the first and the second electrodes; and
- 10 a protection layer on a cavity-side surface of the first electrode to protect the first electrode when a sacrificial layer between the first electrode and the second electrode is removed.
13. The interferometric modulation pixel of claim 12, wherein the protection layer does not contain silicon.
- 15 14. The interferometric modulation pixel of claim 12, wherein the protection layer comprises metal oxides.
- 20 15. The interferometric modulation pixel of claim 12, wherein the protection layer comprises aluminum oxide, titanium oxide or tantalum oxide.
16. A method of manufacturing an interferometric modulation pixel, comprising:
- 25 forming a first transparent conductive layer on a transparent substrate;

forming a light-absorption layer on the first transparent conductive layer;

forming an insulating layer on the light-absorption layer;

forming a protection layer on the insulating layer;

forming a sacrificial layer on the protection layer;

5 forming at least two first openings in the sacrificial layer, the protection layer, the insulating layer, the light-absorption layer and the transparent conductive layer to demarcate and define a first electrode between the two first openings, wherein the first electrode is made by stacking the insulating layer, the light-absorption layer and the transparent conductive layer;

10 coating a photosensitive material on the sacrificial layer and in the first openings;

patternning the photosensitive material to form supports in the first openings;

forming a reflective conductive layer on the sacrificial layer and the

15 supports;

forming at least two second openings in the reflective conductive layer to demarcate and define a second electrode between the two second openings, wherein the second electrode is made from the reflective conductive layer and the orientation of the two second openings is perpendicular to the two first

20 openings; and

removing the sacrificial layer.

17. The method of claim 16, wherein the insulating layer comprises silicon oxide or silicon nitride.

18. The method of claim 16, wherein the protection layer does not contain silicon.

19. The method of claim 16, wherein the protection layer comprises
5 metal oxides.

20. The method of claim 16, wherein the protection layer comprises aluminum oxide, titanium oxide or tantalum oxide.

10 21. The method of claim 16, wherein the sacrificial layer comprises metal, polysilicon or amorphous silicon.

22. The method of claim 16, wherein the sacrificial layer is removed by remote plasma etching.

15 23. The method of claim 16, wherein a plasma precursor used by the remote plasma etching comprises a fluorine-based or chlorine-based etchant.